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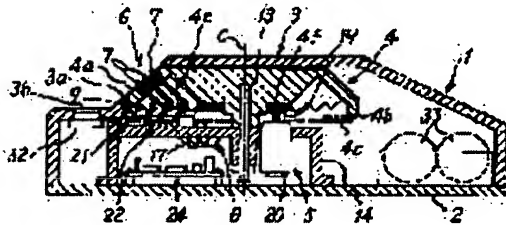
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(54) CONTINUOUS DISPLAY TYPE BRAILLE DISPLAY DEVICE

(57)Abstract

PROBLEM TO BE SOLVED: To make it possible to read much information without much movement of hand, and to obtain sufficient information within a limited display space.

SOLUTION: This device is comprised of a display drum 4 having plural braille display parts 6 of which each represents one character in braille by a combination of six raised or lowered pins 7, a cover 3 for exposing a part of the display drum 4 outside from a braille display window 3a, a display command input part for inputting a braille display command, a display setting part 8 for setting a combination of the pins 7 to be raised or lowered so that a character in braille corresponding to the inputted character signal by selectively raising or lowering the six pins 7 of the braille display parts 6 positioned at the non-display position, a display drum driving part 5 for moving the braille display parts 6 set to a combination of raised or lowered pins 7 by turning the display drum 4 to the cover 3 according to the braille display instruction and also moving the braille display parts 6 positioned at the display position back to the non-display position, and a display holding part 9 for holding the combination of the appearance frequently pins 7 of the braille display parts 6 moved to the display position.



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## CLAIMS

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### [Claim(s)]

[Claim 1] Continuation display formula Braille-points display characterized by providing the following The display drum which has two or more Braille-points displays (6) which display the Braille points for a single character along with a periphery with the combination of frequent appearance of two or more pins (7) arranged according to the specification of Braille points (4) Display drum covering some Braille-points displays of two or more aforementioned Braille-points displays of the display drum are exposed [ covering ] for the aforementioned display drum to the Braille-points display window (3a) shell exterior with a wrap (3) The display-command input section which inputs a Braille-points display command (12) It corresponds to the Braille-points display command which the aforementioned display-command input section inputted. The inside of two or more aforementioned Braille-points displays of the aforementioned display drum, Attitude movement of two or more aforementioned pins of the Braille-points display located in the non-display position covered with the aforementioned display drum covering is carried out alternatively. The display setting section which sets up the combination of frequent appearance of two or more of these pins so that the Braille points corresponding to the inputted alphabetic signal may be displayed (8), Corresponding to the Braille-points display command which the aforementioned display-command input section inputted, the aforementioned display drum is rotated to the aforementioned display drum covering. The Braille-points-display which it was located [ display ] in the aforementioned non-display position of two or more aforementioned Braille-points displays of the display drum, and had the combination of frequent appearance of two or more pins set up by the aforementioned display setting section While making it move to the display position exposed to the aforementioned Braille-points display window shell exterior The display drum mechanical component which moves the Braille-points display located in the aforementioned display position to the aforementioned non-display position (5), The display maintenance section which multiplies by two or more aforementioned pins of a Braille-points display which moved to the aforementioned display position of two or more aforementioned Braille-points displays of the aforementioned display drum, and maintains the combination of frequent appearance of two or more of these pins (9)

[Claim 2] The aforementioned display-command input section is continuation display formula Braille-points display according to claim 1 characterized by having the display informer stage (10 27) which inputs the instructions which rotate the aforementioned display drum in the direction where two or more aforementioned Braille-points displays display a character string serially, and the instructions to which the rotation speed is changed.

[Claim 3] It is the continuation display formula Braille-points display according to claim 1 or 2 which the aforementioned display setting section is equipped with the alphabetic-signal reservoir means (26) which stores the inputted alphabetic signal several predetermined clause minutes, and is carried out [ that the aforementioned display-command input section has the display return means (11 30) which inputs output instructions of the alphabetic signal which returned several predetermined clause minutes, and is given to the aforementioned display setting section, and ] as the feature.

[Claim 4] Continuation display formula Braille-points display of any from a claim 1 to a claim 3

which are characterized by providing the following, or a publication. The aforementioned display drum mechanical component is an amount detection means (21) of rotation to detect the amount of rotation of the aforementioned display drum. The motor made to rotate the aforementioned display drum to the aforementioned display drum covering (20) A motor control means to control the operation of the aforementioned motor based on the amount of rotation which the Braille-points display command and the aforementioned amount detection means of rotation which the aforementioned display-command input section inputted detected (24)

[Claim 5] The aforementioned display informer stage is continuation display formula Braille-points display according to claim 4 characterized by having the adjustable signal generator (27) which is operated by the manual operation member (10) arranged by approaching the Braille-points display window of the aforementioned display drum covering, and its manual operation member, and outputs a signal to the aforementioned motor control means.

[Claim 6] Continuation display formula Braille-points display of any from a claim 1 to a claim 5 which are characterized by providing the following, or a publication. The aforementioned display setting section is an amount detection means (21) of rotation to detect the amount of rotation of the aforementioned display drum. Two or more actuators of the pin which makes a train in the move direction of the aforementioned Braille-points display accompanying rotation of the aforementioned display drum of two or more one aforementioned pins of the aforementioned Braille-points display which moved out of the aforementioned display position, and the crossing direction about which it negotiates with a part for a single tier at least, respectively (17) the amount of rotation of the aforementioned display drum which the aforementioned amount detection means of rotation detected -- being based -- the aforementioned actuator -- the above of the aforementioned Braille-points display -- the actuator control means (24) to which alternative attitude movement of the pin for a single tier is made to perform even if few

[Claim 7] The aforementioned display return means is continuation display formula Braille-points display according to claim 6 characterized by having the signal generator (30) which is operated by the manual operation member (11) arranged by approaching the Braille-points display window of the aforementioned display drum covering, and its manual operation member, and outputs a signal to the aforementioned alphabetic-signal reservoir means.

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[Translation done.]

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

#### [0001]

[The technical field to which invention belongs] This invention relates to the Braille-points display which displays Braille points continuously especially according to operation of a user about the Braille-points display which displays Braille points automatically.

#### [0002]

[Description of the Prior Art] The Braille-points display by which the conventional proposal is made as one of the meanses for a visual-sense inconvenient person receiving information Each fluting of the hole aperture board which has the fluting arranged according to the specification of Braille points is met. with an actuator a pin by the electrical and electric equipment and carrying out attitude movement mechanically and making it appear frequently alternatively from two or more holes of the hole aperture board It is what shows the user of the equipment alphabetic information like a Braille-points book. many of these conventional equipments A character is expressed to one line as the hole aperture board put in order and arranged side by side, the Braille-points information is updated per one line, and it is developed by the use which mainly displays [ in / desk work / by the measure / in about 40 ] separately the character displayed on the screen of a personal computer in braille.

#### [0003]

[Problem(s) to be Solved by the Invention] however, in this conventional Braille-points display Since the actuator which carries out attitude movement of two or more pins is formed in each hole aperture board which displays the Braille points for a single character, the size of each hole aperture board comparatively greatly from a bird clapper Since the number of characters which can be displayed by one line is restricted by the size of equipment, the number of characters of number \*\*\*\*\* of hole aperture boards put in order which can be displayed at once decreases. so, the user of equipment The line was changed repeatedly, and the text of a comparatively short content also had the problem that information had to be read, sliding a finger from the left greatly to the right.

[0004] Moreover, since even the above Braille-points display was not used and a Braille-points indication in a public facility etc. was given to the fixed display by the usual salient, it is expression simplified as much as possible from a display space being restricted, and there was a problem that it so was not sufficient information presentation in many cases for the visual-sense inconvenient person.

#### [0005]

[A The means for solving a technical problem, and its operation and effect] This invention is a thing aiming at offering the equipment which solved the above-mentioned technical problem advantageously. the continuation display formula Braille-points display of this invention The display drum which has two or more Braille-points displays which display the Braille points for a single character along with a periphery with the combination of frequent appearance of two or more pins arranged according to the specification of Braille points, Display drum covering some Braille-points displays of two or more aforementioned Braille-points displays of the display drum are exposed [ covering ] for the aforementioned display drum to the Braille-points display

window shell exterior with a wrap. It corresponds to the Braille-points display command which the display-command input section which inputs a Braille-points display command, and the aforementioned display-command input section inputted. Attitude movement of two or more aforementioned pins of the Braille-points display located in the non-display position covered with the aforementioned display drum covering of two or more aforementioned Braille-points displays of the aforementioned display drum is carried out alternatively. The display setting section which sets up the combination of frequent appearance of two or more of these pins so that the Braille points corresponding to the inputted alphabetic signal may be displayed, Corresponding to the Braille-points display command which the aforementioned display-command input section inputted, the aforementioned display drum is rotated to the aforementioned display drum covering. The Braille-points display which it was located [ display ] in the aforementioned non-display position of two or more aforementioned Braille-points displays of the display drum, and had the combination of frequent appearance of two or more pins set up by the aforementioned display setting section While making it move to the display position exposed to the aforementioned Braille-points display window shell exterior The display drum mechanical component which moves the Braille-points display located in the aforementioned display position to the aforementioned non-display position, It comes to have the display maintenance section which multiplies by two or more aforementioned pins of a Braille-points display which moved to the aforementioned display position of two or more aforementioned Braille-points displays of the aforementioned display drum, and maintains the combination of frequent appearance of two or more of these pins.

[0006] If are shown in this Braille-points display and the user slack visual-sense inconvenient person of the equipment concerned inputs a Braille-points display command using the display-command input section It corresponds to the Braille-points display command which the display-command input section inputted. first the display setting section The inside of the Braille-points display of these plurality of a display drum which has two or more Braille-points displays which display the Braille points for a single character along with a periphery with the combination of frequent appearance of two or more pins arranged according to the specification of Braille points, Attitude movement of two or more pins of the Braille-points display located in the non-display position covered with display drum covering is carried out alternatively. For example, the combination of frequent appearance of two or more of these pins is set up so that the Braille points corresponding to the alphabetic signal for the single character inputted from the word processor, the personal computer, etc. may be displayed. Subsequently, a display drum mechanical component rotates a display drum to display drum covering. The Braille-points display which it was located [ display ] in the non-display position of two or more Braille-points displays of the display drum, and had the combination of frequent appearance of two or more pins set up by the display setting section While making it move to the display position exposed to the Braille-points display window shell exterior of display drum covering Move the Braille-points display located in the display position to a non-display position, and this multiplies by two or more pins of a Braille-points display which the display maintenance section moved to the display position of two or more Braille-points displays of a display drum. The combination of frequent appearance of two or more of these pins is maintained so that a pin may not withdraw, even if the user of the equipment concerned traces by the fingertip. On the other hand, the display setting section carries out attitude movement of two or more pins of a Braille-points display which have moved to the non-display position from the display position by the above-mentioned rotation of a display drum alternatively. Next, operation of setting up the combination of frequent appearance of two or more of these pins so that the Braille points corresponding to the alphabetic signal for the inputted single character may be displayed is repeated.

[0007] Therefore, while displaying Braille points on two or more Braille-points displays in alignment with the periphery of a display drum one after another according to the equipment of this invention Since move those Braille points to a display position one by one, it is made to expose outside continuously from the Braille-points display window of display drum covering, the user slack visual-sense inconvenient person of the equipment concerned traces by the fingertip and it enables it to read Since the user can read many information continuously, almost fixing a

hand and a finger near [ the ] a Braille-points display window, Braille points are moreover displayed continuously and it is sufficient for the number of characters in at least about 4-5 characters displayed on equipment, Since the size of the whole equipment can be reduced more sharply than before and Braille points are displayed continuously, the information on amount sufficient also in the display space restricted [ public facility ] can be offered.

[0008] In this invention in addition, the aforementioned display-command input section According to the equipment with which two or more aforementioned Braille-points displays may have the display informer stage which inputs the instructions which rotate the aforementioned display drum in the direction which displays a character string serially, and the instructions to which the rotation speed is changed, and have this display informer stage While the user of the equipment concerned may make presenting of Braille-points information start at the arbitrary times Since Braille points may be serially displayed with a desired speed according to the speed which changes with individuals and which can be Braille-points read, while an unfamiliar person can also read information certainly to reading of Braille points, the person familiar to reading of Braille points can read information more in a short time.

[0009] In this invention moreover, the aforementioned display setting section It has the alphabetic-signal reservoir means which stores the inputted alphabetic signal several predetermined clause minutes. the aforementioned display-command input section According to the equipment which may have the display return means which inputs output instructions of the alphabetic signal which returned several predetermined clause minutes, and is given to the aforementioned display setting section, and has this alphabetic-signal reservoir means and a display return means Since the user of the equipment concerned can read from several minutes before a predetermined clause and can perform curing easily, reading of information can be ensured.

[0010] Furthermore, it sets to this invention. the aforementioned display drum mechanical component An amount detection means of rotation to detect the amount of rotation of the aforementioned display drum, and the motor made to rotate the aforementioned display drum to the aforementioned display drum covering, You may have a motor control means to control the operation of the aforementioned motor based on the amount of rotation which the Braille-points display command and the aforementioned amount detection means of rotation which the aforementioned display-command input section inputted detected. According to the equipment which has this amount detection means of rotation, a motor, and a motor control means Since a display drum mechanical component can be operated so that it may be made to synchronize with the display setting section in which this also operates according to the Braille-points display command which the display-command input section inputted and a display drum may be rotated to display drum covering The display setting section can display Braille points on two or more Braille-points displays of a display drum certainly one by one.

[0011] In this invention and the aforementioned display informer stage The manual operation member arranged by approaching the Braille-points display window of the aforementioned display drum covering, adjustable signal generators which are operated by the manual operation member and output a signal to the aforementioned motor control means, such as a variable resistor, -- having -- \*\*\*\* -- this manual operation -- according to the equipment which has a member and an adjustable signal generator The degree of \*\*\*\*\* of a display drum, as a result the continuation display speed of Braille points can be easily changed with simple and cheap composition. In addition, in addition to the above-mentioned composition, the aforementioned display informer stage may have adjustable signal generators, such as a circuit which the Braille-points display command by voice input is instead discriminated [ circuit ], and changes an output signal to it, and a variable resistor operated by \*\*\*\* operating member, such as a pedal.

[0012] In this invention moreover, the aforementioned display setting section The inside of an amount detection means of rotation to detect the amount of rotation of the aforementioned display drum, and two or more one aforementioned pins of the aforementioned Braille-points display which moved out of the aforementioned display position, Two or more actuators of the pin which makes a train in the move direction of the aforementioned Braille-points display accompanying rotation of the aforementioned display drum, and the crossing direction about

which it negotiates with a part for a single tier at least, respectively, You may have the actuator control means to which alternative attitude movement of the pin for a single tier is made to perform even if few. the amount of rotation of the aforementioned display drum which the aforementioned amount detection means of rotation detected -- being based -- the aforementioned actuator -- the above of the aforementioned Braille-points display -- According to the equipment which has this amount detection means of rotation, an actuator, and actuator control means, the display setting section only with a number of two or more pins of one Braille-points display of actuators about which it negotiates with a part for a single tier at least, respectively Since Braille points can be displayed on two or more Braille-points displays which meet the periphery of a display drum with rotation of a display drum one after another, display setting \*\*\*\*\* can make size of the whole equipment compact.

[0013] Furthermore, it sets to this invention. the aforementioned display return means The manual operation member arranged by approaching the Braille-points display window of the aforementioned display drum covering, signal generators, such as a switch which is operated by the manual operation member and outputs a signal to the aforementioned alphabetic-signal reservoir means, -- having -- \*\*\*\* -- this manual operation -- according to the equipment which has a member and a signal generator It can read from several minutes before a predetermined clause with simple and cheap composition, and curing can be easily made possible. In addition, in addition to the above-mentioned composition, the aforementioned display return means may have signal generators, such as a circuit which the Braille-points display command by voice input is instead discriminated [ circuit ], and instead generates an output signal, and a switch operated by \*\*\*\* operating member, such as a pedal.

[0014]

[Embodiments of the Invention] Below, an example explains the gestalt of implementation of this invention in detail based on a drawing. It is the cross section in which drawing 1 (a) - (d) is the plan showing the appearance of one example of the continuation display formula Braille-points display of this invention, respectively, front view, a side elevation, and a rear-face view, and drawing 2 shows the internal structure of the equipment of the example here.

[0015]. It has the housing 1 with which the Braille-points display of this example makes the shape of an outline rectangular parallelepiped as shown in drawing 1 ; this housing 1 consists of a pars basilaris ossis occipitalis 2 and covering 3 as display drum covering fixed to the pars basilaris ossis occipitalis 2 possible [removal], and when the user of the equipment concerned places a hand there, the upper part of the covering 3 is formed in the configuration which rose gently-sloping so that it may get used to a hand. And the display drum mechanical component 5 which rotates the display drum 4 and its display drum 4 in housing 1 as shown in drawing 2 , The display setting section 8 which sets up the combination of frequent appearance of the Braille-points pin 7 of the Braille-points display 6 prepared in the display drum 4, The display maintenance section 9 which maintains the combination of frequent appearance of the Braille-points pin 7 of the Braille-points display 6 while the Braille-points display 6 to which the display setting section 8 set the combination of frequent appearance of the Braille-points pin 7 is in the display position (inside of the range E of the plan shown in drawing 4 ) exposed outside from Braille-points display window 3a of the covering 3 shown in drawing 1 is contained. Furthermore, although not illustrated in drawing 2 , the display-command input section 12 is constituted with two levers of the display delivery lever 10 and the display return lever 11 which project on both sides of Braille-points display window 3a of the covering 3 shown in drawing 1 . The below-mentioned variable resistor and below-mentioned switch which those levers 10 and 11 are operated manually and input the display command from the user of the equipment concerned are also held.

[0016] the display drum 4 in this example -- a part of drawing 3 (a), as shown in a notching perspective diagram While being supported free [ the rotation to the circumference of the medial-axis line C ] by the susceptor 14 fixed to the pars basilaris ossis occipitalis 2 within housing 1 through the support shaft 13 which is making the shape of an outline disk and was planted in the core An interval is vacated for a hoop direction along with annular marginal part 4b which has \*\*\*\* cone-like Braille-points screen 4a in the upper surface side, and projects in the



direction of an axis from the inferior-surface-of-tongue side, and it has much slit 4c for the amount detection of rotation.

[0017] And two or more (the example of illustration 20) above-mentioned Braille-points displays 6 are formed in the hoop direction at equal intervals along with the periphery of the display drum 4, as shown in drawing 4. As shown in the perspective diagram which turned the bottom view of drawing 5, and the display drum 4 of drawing 6 over, and was seen with the cross section while those Braille-points displays 5 penetrate each and the display drum 4, three steps in all of columns are biseriate \*\*\*\* horizontally at the point array for a single character of the specification of Braille points -- with 4d of six pin support holes which carry out opening to the above-mentioned Braille-points screen 4a by arrangement. The six above-mentioned Braille-points pins 7 with mechanical-component-ed 7b bent by 90 outlines to shank 7a by which the point was rounded off while being inserted in 4d of those pin support holes, respectively and being supported possible [ attitude movement ], and its shank 7a, Are formed so that it may extend in radial at the inferior-surface-of-tongue side of the display drum 4, and it holds three single tiers at a time those Braille-points pins 7. It has baffle slit 4e which rotation of the circumference of the axis of itself of those Braille-points pins 7 is prevented [ e ] by contact on the side of mechanical-component-ed 7b in which those Braille-points pins 7 were bent, and makes a slanting lower part always project the edge of the mechanical-component-ed 7b from the inferior surface of tongue of the display drum 4.

[0018] This each point character display 6 about six Braille-points pins 7 of each point character display 6 alternatively. It is moved with the actuator with which the above-mentioned display setting section 8 mentions later the edge of mechanical-component-ed 7b of the Braille-points pin 7 projected in the slanting lower part from the inferior surface of tongue of the display drum 4 in the extension direction of shank 7a of the Braille-points pin 7. The combination of the frequent appearance is set up so that each point character display 6 may display the Braille points for a single character because these six Braille-points pins 7 appear frequently alternatively to Braille-points screen 4a of the display drum 4.

[0019] moreover, the above-mentioned each point character display 6 fixed in the both-sides wall of each baffle slit 4e, respectively -- stop shifting -- a member 15 -- having -- \*\*\*\* -- the -- a member 15 stop shifting. For example, while being formed from a thin spring-steel board, it cuts to three places, and it is pin presser-foot section 15a by lifting processing. It is formed. Those pin presser-foot section 15a with elasticity. By pressing the side of shank 7a of each point character pin 7, and inserting each point character pin 7 from both sides. Gap of the attitude direction which each point character pin 7 while being located in the non-display position which the Braille-points display 6 is covered with the covering 3 shown in drawing 1 besides the above-mentioned display position, and does not expose outside from Braille-points display window 3a does not mean is prevented. three [ and ] were fixed to the inferior-surface-of-tongue side of the display drum 4 in order that the above-mentioned each point character display 6 might prevent the ejection of each point character pin 7 from 4d of pin support holes of the display drum 4 further, as shown in the cross section of drawing 7 and drawing 8 -- annular -- it has the member 16 stop escaping (others -- in drawing, it is omitting for simplification).

[0020] Moreover, the display setting section 8 in this example is arranged in the setting position (the range S of drawing 4) in front of the above-mentioned display position (the range E of drawing 4) by radial about the rotation direction D of the display drum 4 by the display drum mechanical component 5, as shown in drawing 4. Three were respectively supported by the above-mentioned susceptor 14 in the state of the inclination as shown in drawing 7. It has the solenoid solenoid type actuator 17. for example, electromagnetism -- these three actuators 17. It has a member 18. negotiations of the shape of a cross-section KO character which can be multiplied by the edge of mechanical-component-ed 7b of three Braille-points pins 7 of one of two columns of the above-mentioned each point character display 6, respectively -- the energization from the control unit which will be later mentioned if three Braille-points pins 7 of one column of one Braille-points display 6 come to the above-mentioned setting position with rotation of the display drum 4 -- those negotiations -- a member 18 by carrying out attitude movement, as the drawing 7. Nakaya mark P shows independently mutually Frequent appearance



of three Braille-points pins 7 of one column of the Braille-points display 6 is set up simultaneously. In addition, in drawing 7 and drawing 8, the Braille-points pin 7 of middle projects and the Braille-points pin 7 of a position and both the sides is located in a devotion position, respectively.

[0021] As this display drum mechanical component [ in / this example / on the other hand ] 5 is shown in drawing 2 and drawing 3 (a) While having the servo motor 20 supported by the above-mentioned susceptor 14 with 4f of main wheels formed in the center section in the inferior-surface-of-tongue side of the display drum 4 at one, and the pinion 19 which meshes with 4f of the main wheel As shown in the fragmentary sectional view of drawing 2 and drawing 3 (b), and the development of drawing 3 (c), it has the photo interrupter 21 as an amount detection means of rotation. a servo motor 20 It is made to rotate in the above-mentioned gearing group 19 and the fixed direction which shows the display drum 4 by the drawing 4 Nakaya mark D through 4 f by rotating a pinion 19 by energization from the above-mentioned control unit. Moreover, a photo interrupter 21 is detecting the light which passes slit 4c for the amount detection of rotation of the above-mentioned annular marginal part 4b by the side of the inferior surface of tongue of the display drum 4, and outputs the signal which shows the amount of rotation of the display drum 4 (rotation angle) to the above-mentioned control unit.

[0022] Moreover, as shown in drawing 4 and drawing 8, the display maintenance section 9 in here Hanging section 22a of the tabular with the cross-section configuration which inclined according to the tilt angle of mechanical-component-ed 7b of the Braille-points pin 7 while having a circular flat-surface configuration respectively of three sheets Those hanging section 22a Base 22b which supports the soffit section It has: hanging of the sector which covers the above-mentioned whole display position (the range E of drawing 4), and extends -- from a member 22 -- becoming -- the hanging -- each hanging section 22a of a member 22 Covering the overall length of the extension direction, so that clearly [ height may be fixed and ] from drawing 8 If each point character display 6 goes into the above-mentioned display position from the above-mentioned setting position (the range S of drawing 4) with rotation of the display drum 4, it will multiply by the edge of mechanical-component-ed 7b of the Braille-points pin 7 of each stage of the Braille-points display 6. When the Braille-points pin 7 is located in a devotion position, it hangs on the devotion position, and when the Braille-points pin 7 projects and it is located in a position, it hangs on the protrusion position.

[0023] It is locating a member 18 in a retreat position. the negotiations of the shape of a cross-section KO character by which the above-mentioned display setting section 8 was further formed in the actuator 17 -- the edge of mechanical-component-ed 7b of the Braille-points pin 7 which came to the above-mentioned setting position -- the negotiations, in order to make it a member 18 negotiate certainly As shown in drawing 4, the Braille-points pin 7 located in the protrusion position of the Braille-points display 6 from which it separated from the above-mentioned display position with rotation of the display drum 4 is pulled back and pulled back in a devotion position, and it has the member 23. this pull back -- a member 23 -- the above-mentioned hanging -- like a member 22 Pull back section 23a of the tabular with the cross-section configuration which inclined according to the tilt angle of mechanical-component-ed 7b of the Braille-points pin 7 while having a circular flat-surface configuration respectively of three sheets Those pull back section 23a Base 23b which supports the soffit section It has. the reset position (range R of drawing 4) whole -- continuing -- extending -- \*\*\*\* -- the pull back -- each pull back section 23a of a member 23 Height is low as height changes gradually and progresses in the rotation direction D of the display drum 4 previously along the extension direction.

[0024] drawing 9 -- the above-mentioned negotiations -- a member 18 and hanging -- so that clearly [ it may be the development showing the state of the Braille-points pin 7 at the time of pulling back with a member 22 and passing along physical relationship and those members with a member 23 and ] from this drawing the negotiations driven with an actuator 17 with rotation of the display drum 4 in the above-mentioned setting position (range S) -- a member 18 mechanical-component-ed 7b of the Braille-points pin 7 which did not carry out advance movement with the position which approached the member 16 stop escaping -- the above-

mentioned display position (range E) -- entering -- hanging -- hanging section 22a of a member 22 A passage the bottom Furthermore it pulls back also in the above-mentioned reset position (range R), and is pull back section 23a of a member 23. The bottom is moved in the direction of arrow D. the meantime and above-mentioned display position -- hanging -- hanging section 22a of a member 22 while mechanical-component-ed 7b is moving the bottom, even if the force of the protrusion direction joins the Braille-points pin 7 by vibration etc. -- mechanical-component-ed 7b -- hanging section 22a Since it is hung, the Braille-points pin 7 does not project.

[0025] the -- on the other hand -- the above-mentioned setting position (range S) -- negotiations -- a member 18 mechanical-component-ed 7b of the Braille-points pin 7 which carried out advance movement rotation of the display drum 4 -- following -- the above-mentioned display position (range E) -- entering -- hanging -- hanging section 22a of a member 22 The bottom is moved. Furthermore it goes into the above-mentioned reset position (range R), pulls back, and is pull back section 23a of a member 23. It goes into the bottom. Pull back section 23a It pulls back to the position which approaches a member 16 it moves and stop escaping, \*\*\*\*ing on the sloping inferior surface of tongue. the meantime and above-mentioned display position -- hanging -- hanging section 22a of a member 22 While mechanical-component-ed 7b is moving the bottom Even if it pushes into the Braille-points pin 7 by the fingertip of the user of the equipment concerned etc. and the force of a direction is added, mechanical-component-ed 7b is hanging section 22a. Since it is hung, the Braille-points pin 7 does not withdraw.

[0026] Drawing 10 constitutes a part of above-mentioned display drum mechanical component 5 and each above-mentioned display setting section 8 in this example. The control unit 24 prepared on the circuit board held in the above-mentioned housing 1 is shown. this control unit. 24 The central-process unit (CPU) 25 and memory 26 which constitute the usual microcomputer, While being fixed to the background of covering 3 and changing resistance by operation of the above-mentioned display delivery lever 10 The analog / digital (A/D) converter 28 which changes into a digital signal the analog signal which the variable resistor 27 as a part of display-command input section 12 in which it returns to a original position by means of a spring, and initial resistance is shown at the time of release of the lever 10 outputs, and inputs it into CPU25, It has the motor controller 29 which outputs a motorised signal based on the output signal of the CPU25. While CPU25 inputs an ON/OFF signal from the switch 30 as a part of display-command input section 12 with which it is fixed to the background of covering 3, and this also operates by operation of the above-mentioned display return lever 11 besides the output signal of a variable resistor 27 The RS232C communication line 31 is minded for the set of the Braille-points pin which inputs the signal which shows the amount of rotation of the display drum 4 (rotation angle) from the above-mentioned photo interrupter 21, in addition is mentioned later. The input of the alphabetic signal from a personal computer, a word processor, etc. and the output of the alphabetic-signal send indication signal to the personal computer and word processor are performed.

[0027] Although it does not illustrate in drawing 10 while outputting the actuator driving signal which the above CPU 25 makes carry out the attitude operation of the three actuators 18 independently furthermore, the display driving signal on which the character corresponding to the Braille points set up with the actuator 18 is displayed is outputted to the liquid crystal display 32 fixed to the position of the liquid crystal display aperture 3b bottom which has transparent covering of covering 3 of the background of covering 3 as shown in drawing 2 . In addition, in this example, electric supply to the above-mentioned control unit 24 is performed from the cell 33 held in housing 1, as shown in drawing 2 .

[0028] If shown in the Braille-points display of this example equipped with this composition If operation which the user slack visual-sense inconvenient person of the equipment concerned places a hand on the covering 3 of housing 1, and lengthens the display delivery lever 10 with a finger is carried out, as shown in explanatory drawing of drawing 11, according to the control input For example, the Braille-points display command which indicates by Braille points while rotating the display drum 4 in the direction of arrow D comparatively slowly, when it is H1 with

few control inputs is shown. The resistance which shows the Braille-points display command which indicates by Braille points while rotating the display drum 4 in the direction of arrow D comparatively quickly, when it is H2 with many control inputs is inputted into CPU25 from a variable resistor 27. Moreover, if operation in which the above-mentioned user lengthens the display delivery lever 11 with a finger is carried out, the ON/OFF signal which shows the Braille-points display command which indicates the text corresponding to the number of times of operation which returned several clause minutes by Braille points will be inputted into CPU25 from a switch 30, rotating the display drum 4 in the direction of arrow D.

[0029] If a Braille-points display command is inputted into CPU25 by operation of the above-mentioned display delivery lever 10 Send an alphabetic-signal send indication signal to a personal computer, a word processor, etc., and the alphabetic signal for a single character is made to output from there through the RS232C communication line 31 first. After inputting the alphabetic signal for the single character, while recording the alphabetic signal on memory 26 So that the combination of frequent appearance of the Braille-points pin corresponding to the alphabetic signal may be set up Attitude movement of the three Braille-points pins 7 for one column of the beginning of the Braille-points display 6 in the present above-mentioned setting position (the range S of drawing 4 ) is alternatively carried out with an actuator 17. Subsequently, a servo motor 20 is driven, referring to the signal which shows the amount of rotation of the display drum 4 from a photo interrupter 21 (rotation angle). Attitude movement of the three Braille-points pins 7 for one column by which the above-mentioned Braille-points display 6 remains by rotating the display drum 4 slightly in the direction of arrow D is alternatively carried out with an actuator 17. The Braille points corresponding to the alphabetic signal for the single character which carried out [ above-mentioned ] the input are displayed on the one Braille-points display 6, the character corresponding to the Braille points is collectively displayed on a liquid crystal display 32, and those who do not have trouble in a visual sense enable it to read information in a liquid crystal display 32 by the eye.

[0030] CPU25 is driving a servo motor 20 and rotating the display drum 4 in the direction of arrow D, referring to the signal from a photo interrupter 21 after that. The Braille-points display 6 which set up the Braille-points display is sent out to the above-mentioned display position. Three Braille-points pins 7 for one column of the beginning of the following Braille-points display 6 are moved to the position which may be driven with an actuator 17 at the same time it maintains the combination of the frequent appearance of six Braille-points pins 7 of the Braille-points display 6 to a member 22. hanging -- An alphabetic-signal send indication signal is sent to a personal computer etc., and the following alphabetic signal for a single character is made to output from there through the RS232C communication line 31 furthermore.

[0031] CPU25 is performing this processing repeatedly at the speed according to the control input of the display delivery lever 10. While moving the Braille-points display 6 which set up Braille points to the above-mentioned Braille-points display position one by one at the speed according to the control input of the lever 10 and making it expose to the Braille-points display window 3a shell exterior of covering 3 The character corresponding to those Braille points is displayed on a liquid crystal display 32 one by one, and memory 26 is made to memorize many alphabetic signals which set Braille points as the Braille-points display 6 on the other hand one by one as long as the storage capacity allows. And when memory 26 overflows, it erases sequentially from the alphabetic signal made to memorize previously, and a next signal is made to memorize. In addition, memory 26 has the storage capacity of the grade which can memorize the alphabetic signal of several sentence eve of the beginning of spring in the usual text.

[0032] When it replaces with the display delivery lever 10 and a Braille-points display command is inputted by operation of the display return lever 11 after that, and CPU25 Several clause minutes corresponding to the number of times of operation of the lever 11 for the character string of the alphabetic signal which memory 26 has memorized, When the alphabetic signal of a punctuation is followed, it returns and the display delivery lever 10 is operated again, from the alphabetic signal of the position which returned Shortly, read the alphabetic signal which memory 26 has memorized one by one, and Braille points are set up. Move the Braille-points display 6 which set up the Braille points to the above-mentioned Braille-points display position one by

one at the speed according to the control input of a lever 10, and it is made to expose to the Braille-points display window 3a shell exterior of covering 3. When indicating to the last the alphabetic signal which memory 26 has memorized by Braille points, an alphabetic-signal send indication signal is sent to a personal computer etc., and a single-character [ every ] alphabetic signal is made to output from there after that.

[0033] Thus, if CPU25 moves the Braille-points display 6 which rotates the display drum 4 and which both the actuators 17 were operated and set up Braille points to the above-mentioned display position one by one. The Braille-points display 6 which was moving to the display position previously goes into the non-display position which separates from a display position and is covered with covering 3. It passes along the above-mentioned reset position ( drawing 4 and the range R of drawing 9 ) first, and after it pulls back the Braille-points pin 7 located in the protrusion position and all are pulled back by the devotion position by the member 23; it moves to the above-mentioned setting position in the non-display position similarly covered with covering 3.

[0034] Therefore, while displaying Braille points on two or more Braille-points displays 6 in alignment with the periphery of the display drum 4 one after another according to the Braille-points display of this example. Since move those Braille points to a display position one by one, it is made to expose outside continuously from Braille-points display window 3a of covering 3, the user slack visual-sense inconvenient person of the equipment concerned traces by the fingertip and it enables it to read. Since the user can read many information continuously, almost fixing a hand and a finger near [ the ] Braille-points display window 3a, Braille points are moreover displayed continuously and about 4-5 characters are sufficient for the number of characters displayed on equipment. Since the size of the whole equipment can be reduced more sharply than before and Braille points are displayed continuously, the information on amount sufficient also in the display space restricted [ public facility ] can be offered.

[0035] And the instructions the display-command input section 12 rotates [ instructions. ] the display drum 4 in the direction where two or more Braille-points displays 6 display a character string serially according to the equipment of this example. Since it has the lever 10 and variable resistor 27 which input the instructions to which the rotation speed is changed as a display informer stage, while the user of the equipment concerned may make presenting of Braille-points information start at the arbitrary times. Since Braille points may be serially displayed with a desired speed according to the speed which changes with individuals and which can be Braille-points read, while an unfamiliar person can also read information certainly to reading of Braille points, the person familiar to reading of Braille points can read information more in a short time.

[0036] Furthermore, according to the equipment of this example, the display setting section 8 is equipped with the memory 26 as an alphabetic-signal reservoir means which stores the inputted alphabetic signal several predetermined clause minutes. The switch 30 which the display-command input section 12 inputs output instructions of the alphabetic signal which returned several predetermined clause minutes, and gives to the display setting section 8 from having as a display return means. The user of the equipment concerned reads from several minutes before a predetermined clause, can perform curing easily, and can ensure reading of information.

[0037] The photo interrupter 21 as an amount detection means of rotation by which the display drum mechanical component 5 furthermore detects the amount of rotation of the display drum 4 according to the equipment of this example. From having the control unit 24 which controls the operation of a servo motor 20 based on the servo motor 20 made to rotate the display drum 4 to covering 3, and the amount of rotation which the Braille-points display command which the display-command input section 12 inputted, and the photo interrupter 21 detected. Since the display drum mechanical component 5 can be operated so that it may be made to synchronize with the display setting section 8 which operates according to a Braille-points display command and the display drum 4 may be rotated to covering 3, the display setting section 8 can resemble two or more Braille-points displays 6 of the display drum 4 one by one, and can display Braille points certainly.

[0038] The display delivery lever 10 as a manual operation member which has furthermore been arranged by approaching Braille-points display window 3a of covering 3 as a display informer

stage according to the equipment of this example, The degree of \*\*\*\*\* of the display drum 4, as a result the continuation display speed of Braille points can be easily changed from having the variable resistor 27 as an adjustable signal generator which is operated with the lever 10 and outputs a signal to a control unit 24 with simple and cheap composition.

[0039] The photo interrupter 21 as an amount detection means of rotation by which the display setting section 8 furthermore detects the amount of rotation of the display drum 4 according to the equipment of this example, The inside of six Braille-points pins 7 of one Braille-points display 6 which moved to the setting position out of the display position, Three actuators 17 about which it negotiates with a part for the single tier of the Braille-points pin 7 which makes a train in the move direction of the Braille-points display 6 accompanying rotation of the display drum 4, and the crossing direction, respectively, Since it has the control unit 24 as actuator control means which make alternative attitude movement of the Braille-points pin 7 for a single tier of the Braille-points display 6 perform to three actuators 17 based on the amount of rotation of the display drum 4 which the photo interrupter 21 detected, the display setting section 8 Only with three actuators 17 about which it negotiates with a part for the single tier of the six Braille-points pins 7 of one Braille-points display 6, respectively Since you can display Braille points on the Braille-points display 6 of plurality (the example of illustration 20) which meets the periphery of the display drum 4 with rotation of the display drum 4 one after another, let size of the display setting section 8, as a result the whole equipment be a compact thing.

[0040] The display return lever 11 as a manual operation member which has furthermore been arranged by approaching Braille-points display window 3a of covering 3 as a display return means according to the equipment of this example, From having the switch 30 as a signal generator which is operated with the lever 11 and outputs a signal to memory 26 through CPU25 of a control unit 24, it can read from several minutes before a predetermined clause with simple and cheap composition, and curing can be easily made possible.

[0041] As mentioned above, although explained based on the example of illustration This invention is not what is limited to an above-mentioned example. for example, the aforementioned display informer stage It adds to the above-mentioned composition. Instead, the circuit to which the Braille-points display command by voice input is discriminated, for example, and an output signal is changed, You may have adjustable signal generators, such as a variable resistor operated by \*\*\*\*\* operating member, such as a pedal. moreover, the aforementioned display return means In addition to the above-mentioned composition, you may have signal generators, such as a circuit which the Braille-points display command by voice input is instead discriminated [ circuit ], and instead generates an output signal, and a switch operated by \*\*\*\*\* operating member, such as a pedal. The aforementioned display setting section and instead of having the alphabetic-signal reservoir means which stores the inputted alphabetic signal several predetermined clause minutes by itself Output instructions of the alphabetic signal which was inputted from the display-command input section and which returned several predetermined clause minutes are sent to a personal computer, a word processor, etc. The alphabetic signal which returned several predetermined clause minutes may be made to output to the personal computer etc., and you may have the actuator located together with two or more trains so that the aforementioned display setting section can carry out attitude movement at once about all the pins for a single character.

[0042] further -- this invention -- setting -- the aforementioned display setting section -- pull back -- instead of having a member 23 -- hanging -- hanging section 22a of a member 22 each point character pin 7 which multiplied, projected and was located in the position -- rotation of the display drum 4 -- following -- the hanging section 22a from -- when it separates, you may have the spring which pulls back the Braille-points pin 7 in a devotion position Moreover, in this invention, the aforementioned display drum mechanical component and the aforementioned display setting section may have the rotary encoder combined with the servo motor 20 instead of the photo interrupter 21 as an amount detection means of rotation. And in this invention, electric power may be supplied to a servo motor 20 and a control unit 24 from a personal computer, a word processor, etc. instead of electric power being supplied from a cell 33, and the aforementioned display setting section may hold altogether the alphabetic signal corresponding

to the alphabetic information which the equipment concerned should display in memory 26 instead of inputting an alphabetic signal from a personal computer, a word processor, etc. [0043] In addition, in this invention, the aforementioned display drum mechanical component may be replaced with a servo motor 20, may drive a display drum by the step motor, further, if the manual operation member of the display-command input section is operated manually, transmits the movement of the manual operating member to a display drum mechanically, and may rotate a display drum. Moreover, the aforementioned display setting section is replaced with the solenoid formula actuator 17, and may carry out attitude movement of the pin by the linear motor formula actuator or the pneumatic cylinder. And the aforementioned display drum may be not the thing of the shape of a disk in the above-mentioned example but the thing of the shape of a cylinder which has a Braille-points display in a peripheral face.

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[Translation done.]

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DESCRIPTION OF DRAWINGS

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## [Brief Description of the Drawings]

[Drawing 1] The side elevation in which the front view in which the plan in which (a) shows the appearance of one example of the continuation display formula Braille-points display of this invention, and (b) show the appearance of the Braille-points display of the example, and (c) show the appearance of the Braille-points display of the example, and (d) are the rear-face views showing the appearance of the Braille-points display of the example.

[Drawing 2] It is the cross section showing the internal structure of the Braille-points display of the above-mentioned example.

[Drawing 3] The cross section in which (a) shows the display drum of the Braille-points display of the above-mentioned example and in which a notch perspective diagram and (b) show a part of the display drum, and (c) are the developments showing a part of the display drum with a photo interrupter in part.

[Drawing 4] It is the plan showing the display drum of the Braille-points display of the above-mentioned example, and the parts of the neighborhood of it except for covering.

[Drawing 5] It is the bottom view showing some display drums of the Braille-points display of the above-mentioned example.

[Drawing 6] It is the perspective diagram which turns some display drums of the Braille-points display of the above-mentioned example over, and is shown with a cross section.

[Drawing 7] It is the cross section showing the half-section of the display drum of the Braille-points display of the above-mentioned example with the actuator of the display setting section.

[Drawing 8] It is the cross section showing the half-section of the display drum of the Braille-points display of the above-mentioned example with the hanging member of the display maintenance section.

[Drawing 9] It is the development showing the state of the Braille-points pin at the time of pulling back with the negotiations member of the Braille-points display of the above-mentioned example, and a hanging member, and passing along physical relationship and those members with a member.

[Drawing 10] It is the block diagram showing the composition of the control system containing the control unit of the Braille-points display of the above-mentioned example.

[Drawing 11] It is explanatory drawing showing the function of the display delivery lever of the Braille-points display of the above-mentioned example.

## [Description of Notations]

1 Housing

3 Covering

3a Braille-points display window

4 Display Drum

5 Display Drum Mechanical Component

6 Braille-Points Display

7 Braille-Points Pin

8 Braille-Points Setting Section

9 Display Maintenance Section



10 Display Delivery Lever  
11 Display Return Lever  
12 Display-Command Input Section  
17 Actuator  
20 Servo Motor  
21 Photo Interrupter  
24 Control Unit  
25 CPU  
26 Memory  
27 Variable Resistor  
29 Motor Controller  
30 Switch

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[Translation done.]

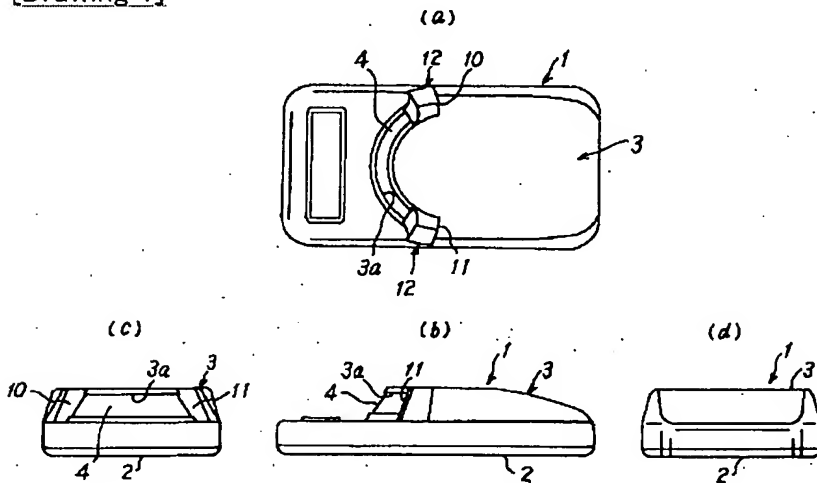
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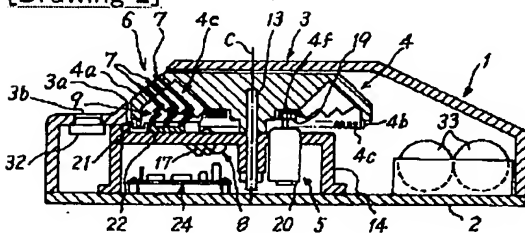
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- 3.In the drawings, any words are not translated.

## DRAWINGS

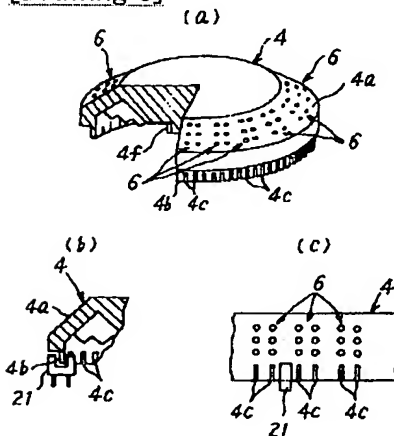
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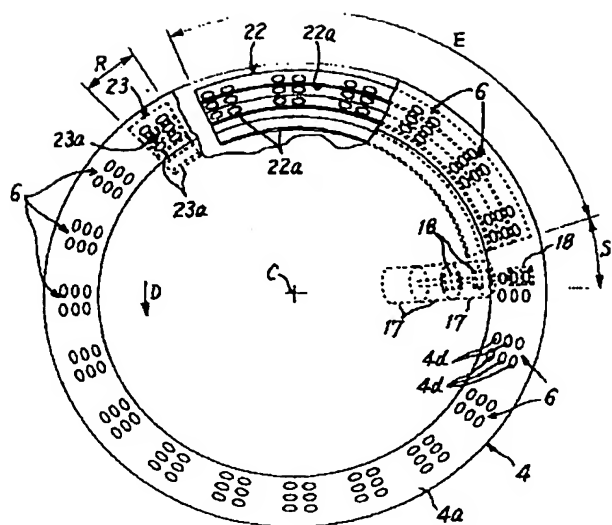
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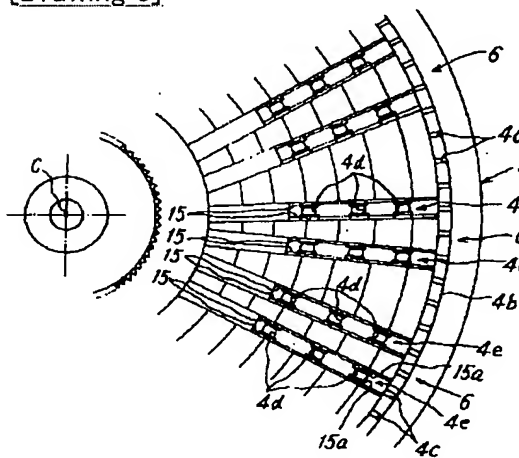
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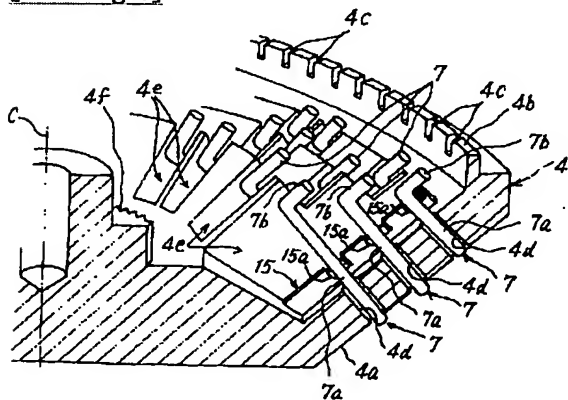
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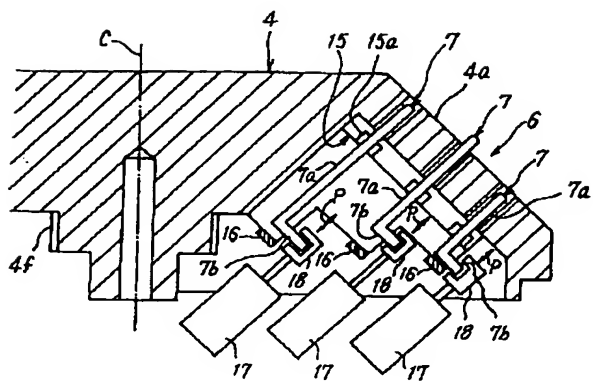
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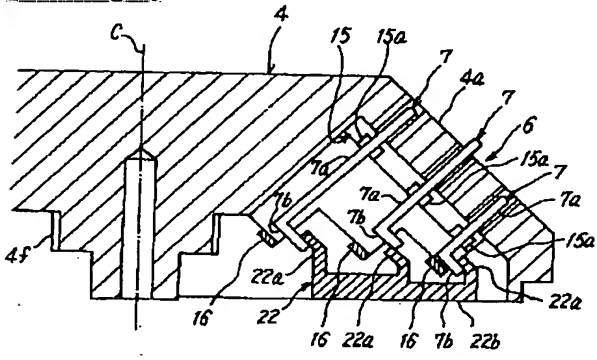
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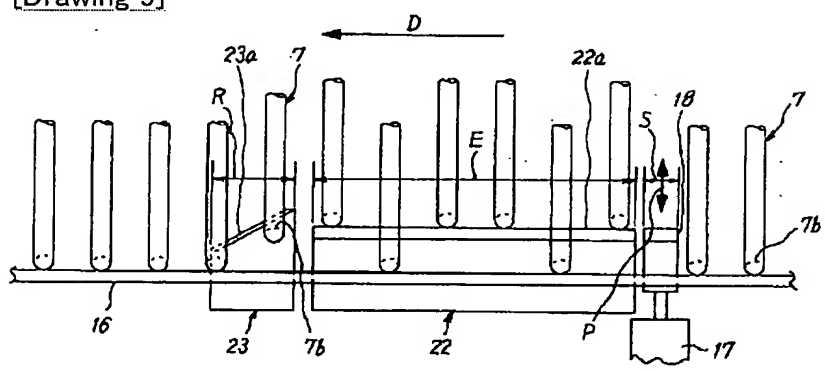
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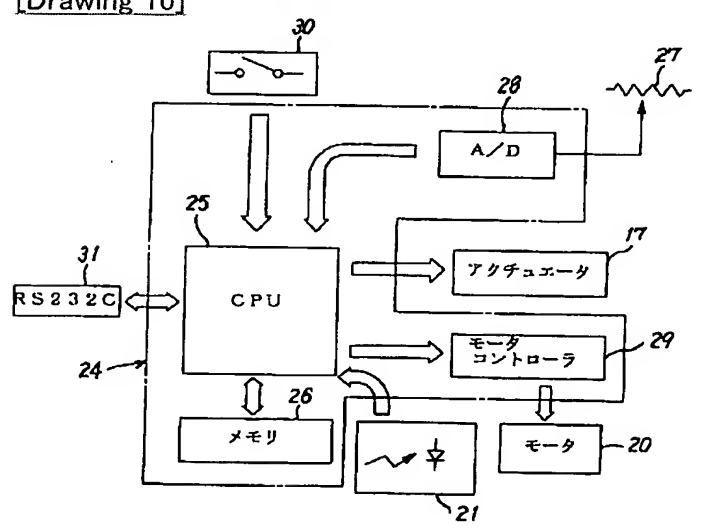
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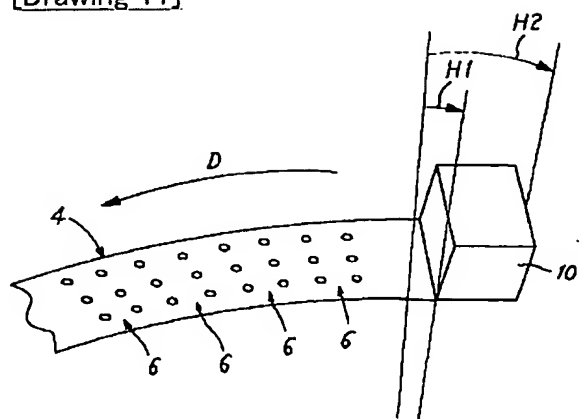
[Drawing 9]



[Drawing 10]



[Drawing 11]



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[Translation done.]